

Abstract Submitted  
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**Neutron lifetime experiment with pulsed neutron beam at J-PARC 01** KENJI MISHIMA, KEK, NOP COLLABORATION — A new beam line using novel techniques of neutron optics for fundamental physics experiment, “NOP,” has been constructed on December 2008. In this talk, we introduce the beamline and a plan of neutron lifetime experiment. An accurate determination of neutron lifetime is important for tests of the Standard Model of Fundamental Particles, as well for the production of light mass nuclei in big bang nucleosynthesis. For the measurement of the neutron lifetime, there are two principally different approaches: one is “In-beam” methods, and the other is the ultracold neutron storage methods. The latest measurement of the latter methods ( $878.5 \pm 0.7_{stat} \pm 0.3_{syst.}$  sec) differs from the previous former method ( $886.3 \pm 1.2_{stat.} \pm 3.2_{syst.}$ ) by 7.8 sec. Thus we are planning the measurement of the lifetime with a intense pulsed neutron source at J-PARC by “in beam” method, and our target accuracy is 0.1%, which is comparable to the ultracold neutron storage method. Our method is a relative measurement of decay electrons and  $^3\text{He}(n,p)^3\text{H}$  reactions by a time projection chamber. The neutron beam is bunched by a spin flip chopper for background reduction and definition of the fiducial volume. In this talk, we would like to introduce our method and discuss how to improve the measurement up to 0.1%.

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